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SUR LA BREVETABILITE (CHAPITRE I OU CHAPITRE II
DU TRAITE DE COOPERATION EN MATIERE DE BREVETS)

(règles 44bis.3.c) et 72.2 du PCT)

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TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference B14564.3 DB		FOR FURTHER ACTION See Form PCT/IPEA/416																									
International application No. PCT/FR2004/050736		International filing date (day/month/year) 20.12.2004	Priority date (day/month/year) 22.12.2003																								
International Patent Classification (IPC) or national classification and IPC G01L1/24																											
Applicant COMMISSARIAT A L'ENERGIE ATOMIQUE																											
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of 4 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table border="0"><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table>				<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																									
Date of submission of the demand		Date of completion of this report																									
Name and mailing address of the IPEA/EP		Authorized officer																									
Facsimile No.		Telephone No.																									

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/050736

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
 - ☐ international search (Rule 12.3 and 23.1(b))
 - ☐ publication of the international application (Rule 12.4)
 - ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
 - ☐ the international application as originally filed/furnished
 - ☒ the description:
 - pages 1-38 _____ as originally filed/furnished
 - pages* _____ received by this Authority on _____
 - pages* _____ received by this Authority on _____
 - ☒ the claims:
 - nos. _____ as originally filed/furnished
 - nos.* _____ as amended (together with any statement) under Article 19
 - nos.* 1-22 _____ received by this Authority on 06.03.2006 with letter of 06.03.2006
 - nos.* _____ received by this Authority on _____
 - ☒ the drawings:
 - sheets 1/4-4/4 _____ as originally filed/furnished
 - sheets* _____ received by this Authority on _____
 - sheets* _____ received by this Authority on _____
 - ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages _____
 - ☐ the claims, nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages _____
 - ☐ the claims, nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/050736

Box No. II

Priority

1. ☐ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:
- ☐ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).
2. ☒ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

Independent claim 1 discloses that the means for measuring the main deformations of the tube include assemblies of "at least two optical gauges with Bragg gratings, [said assemblies being] arranged in non-parallel directions". This definition, which is supported by the description (see page 14, lines 16-22) relates to the gauge assemblies described in figures 3A to 3C. However, priority document FR 0 351 168 (see page 13, lines 19-24, figure 3, and claim 1) discloses only a *rosette-type* gauge assembly. Since the definition of an assembly of "at least two optical gauges with Bragg gratings, [said assembly being] arranged in non-parallel directions" can be interpreted much more broadly than a rosette-type assembly and since no such extension can be directly and unambiguously derived from the only priority document, said definition causes the scope of the subject matter of the present application to be extended beyond the scope disclosed in the priority document.

As a result, the priority claimed for the present application is not valid.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/050736

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims 1-22

YES

Claims

NO

Inventive step (IS)

Claims 1-22

YES

Claims

NO

Industrial applicability (IA)

Claims 1-22

YES

Claims

NO

2. Citations and explanations (Rule 70.7)

1. *Technical field*

The invention relates to an instrumented tubular device for transporting a pressurised fluid (independent claim 1).

2. *Closest prior art*

EP-A-1 296 117 discloses an instrumented tubular device in which the joints between the various tube portions are provided with a fibre optic sensor that extends around the entire tube circumference. The sensor includes an optical fibre provided with a plurality of optical gauge assemblies that have Bragg gratings and are arranged in various angular positions on the tube circumference.

3. *Novelty (PCT Article 33(2))*

The method in independent claim 1 of the present application differs from the device described in EP-A-1 296 117 in that the optical gauge

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

assemblies are arranged in various positions along the tube axis. As a result, the subject matter of claim 1 of the present application is novel.

4. *Inventive step (PCT Article 33(3))*

The use of this novel technical feature enables measurement of the main tube deformations, i.e. axial and transverse deformations. This problem is not raised in **EP-A-1 296 117**, which relates only to the transverse deformation of the tube joints. None of the known prior art documents suggests the solution proposed by the present invention. In particular,

- **WO 03/076887** discloses an optical gauge with Bragg gratings, for measuring deformation and temperature;
- **US 6 586 722 and US 5 726 744** disclose a rosette-type optical deformation gauge with Bragg gratings;
- **US 6 644 848** discloses an optical fibre wound around a tube, for measuring temperature distribution along said tube; and
- **US 6 450 037** discloses a tube-pressure sensor including an optical fibre that has a Bragg grating and is wound around said tube.

It follows that the subject matter of **independent claim 1** in the present application involves an inventive step.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/050736

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

5. *Dependent claims 2 to 22*

Dependent claims 2 to 22 relate to specifications for the device described in independent claim 1. As a result, the subject matter of these claims is also considered to be novel and inventive (PCT Article 33(2) and 33(3)).